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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/628,990

07/28/2003

Opher Kahn

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7335

7590

04/05/2007

Jan Carol Little

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EXAMINER

MCLEAN MAYO, KIMBERLY N

ART UNIT

PAPER NUMBER

2187

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/05/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p>10/628,990</p>	<p>Applicant(s)</p> <p>KAHN ET AL.</p>	
	<p>Examiner</p> <p>Kimberly N. McLean-Mayo</p>	<p>Art Unit</p> <p>2187</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 20-27 is/are rejected.
- 7) ☒ Claim(s) 13-19, 28 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The enclosed detailed action is in response to the Amendment submitted on January 8, 2007.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12 and 20-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogin (USPN: 5,953,685) in view of Woo (USPN: 6,021,076).

Regarding claims 1 and 5, Bogin discloses allocating an original percentage of bandwidth or number of accesses to memory by a memory controller (C 4, L 16-22; bandwidth of device prior to activation of the throttling regime) and decreasing the bandwidth or number of accesses allocated to the memory controller to a percentage lower than an original bandwidth or number of accesses allocated when accesses to memory by the memory controller are more than the original percentage of bandwidth or number of accesses allocated to the memory controller (C 4, L 37-45, L 54-59). Bogin does not disclose increasing the bandwidth or number of accesses allocated to the memory controller to a percentage higher than the original percentage of bandwidth or number of accesses allocated when accesses to memory by the memory controller are less than the original percentage of bandwidth or number of accesses allocated to the memory controller. However, Woo teaches the concept of increasing the bandwidth or number of

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accesses allocated to the memory controller to a percentage higher than the original percentage of bandwidth or number of accesses allocated when accesses to memory by the memory controller are less than the original percentage of bandwidth or number of accesses allocated to the memory controller (C 9, L 60-67; C 10, L 1-10; C 6, L 1-15 – if the temperature [and thus the corresponding operating conditions [bandwidth] of the memory of the device at that instance] is below a threshold, thermal regulation is disabled which effectively increases the memory bandwidth). This feature allows the system to perform optimally when the temperature of the device is within a desired range. Hence it would have been obvious to one of ordinary skill in the art to use the teachings of Woo with the teachings of Bogin for the desirable purpose of optimization and to achieve maximum performance. Regarding claim 5, hardware devices such as memory controllers are controlled/operated by software stored in a machine-accessible medium.

Regarding claims 2 and 6, Bogin and Woo disclose setting a window of time to monitor the percentage of bandwidth or number of accesses to memory by the memory controller (Bogin - Figure 3B, Reference 300; C 5, L 11-19); and measuring the percentage of bandwidth used or number of accesses to memory by the memory controller during the window of time (Bogin - C 5, L 19-31).

Regarding claims 3 and 7, Bogin does not disclose applying a mask to increase the bandwidth or number of accesses allocated to the memory controller to a percentage higher than the original percentage of bandwidth or number of accesses allocated when accesses to memory by the

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memory controller are less than the original percentage of bandwidth or number of accesses allocated to the memory controller. However Bogin and Woo disclose increasing the percentage of memory bandwidth or the number of memory accesses allocated to the memory controller when memory accesses by the memory controller are less than the percentage of memory bandwidth or the number of memory accesses allocated to the memory controller (Woo -C 9, L 60-67; C 10, L 1-10; C 6, L 1-15 – if the temperature [and thus the corresponding operating conditions [bandwidth] of the memory of the device at that instance] is below a threshold, thermal regulation is disabled which effectively increases the memory bandwidth). Since Bogin effectuates changing the bandwidth of the memory by applying a mask, it is evident that the mask would be applied to increase the bandwidth also.

Regarding claims 4 and 8, Bogin and Woo disclose applying a mask to decrease the bandwidth or number of accesses allocated to the memory controller to a percentage higher than the original percentage of bandwidth or number of accesses allocated when accesses to memory by the memory controller are less than the original percentage of bandwidth or number of accesses allocated to the memory controller (C 7, L 63-67; C 8, L 1-12).

Regarding claims 9, 20 and 24, Bogin discloses a chipset (Figure 2A) having a processor having an original percentage of memory bandwidth or number of memory accesses allocated to it (Figure 2A, Reference 108; C 4, L 16-22; bandwidth of device prior to activation of the throttling regime); a memory controller to decrease the bandwidth or number of accesses allocated to the memory controller to a percentage lower than an original bandwidth or number of accesses

allocated when accesses to memory by the memory controller are more than the original percentage of bandwidth or number of accesses allocated to the memory controller (C 4, L 37-45, L 54-59). Bogin does not disclose the memory controller increasing the bandwidth or number of accesses allocated to the memory controller to a percentage higher than the original percentage of bandwidth or number of accesses allocated when accesses to memory by the memory controller are less than the original percentage of bandwidth or number of accesses allocated to the memory controller. However, Woo teaches the concept of increasing the bandwidth or number of accesses allocated to the memory controller to a percentage higher than the original percentage of bandwidth or number of accesses allocated when accesses to memory by the memory controller are less than the original percentage of bandwidth or number of accesses allocated to the memory controller (C 9, L 60-67; C 10, L 1-10; C 6, L 1-15 – if the temperature [and thus the corresponding operating conditions [bandwidth] of the memory of the device at that instance] is below a threshold, thermal regulation is disabled which effectively increases the memory bandwidth). This feature allows the system to perform optimally when the temperature of the device is within a desired range. Hence it would have been obvious to one of ordinary skill in the art to use the teachings of Woo with the teachings of Bogin for the desirable purpose of optimization and to achieve maximum performance.

Regarding claims 10 and 21, Bogin and Woo disclose a first register in the memory controller to set the percentage of memory bandwidth or the number of memory accesses allocated to the memory controller (Bogin - Figure 3B, Reference 310; C 5, L 46-59); a second register in the memory controller to set a window of time to monitor a percentage of memory bandwidth or the

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number of memory accesses used by the memory controller (Bogin - Figure 3B, Reference 300; C 5, L 11-19); and a counter in the memory controller to measure the percentage of memory bandwidth used or the number of memory accesses by the memory controller during the window of time (Bogin - Figure 3B, Reference 303; C 5, L 19-31).

Claims 11, 22 and 26 are rejected for the same rationale applied to claims 3 and 7 above.

Claims 12, 23 and 27 are rejected for the same rationale applied to claims 4 and 8 above.

Claim 25 is rejected for the same rationale applied to claim 2 above.

Allowable Subject Matter

4. Claims 13-19 and 28-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments filed have been fully considered but they are not persuasive.

The Applicant has presented arguments which attack the references as individual references and has not addressed the system suggested by the combination of the references. The above rejection is a 35 U.S.C. 103(a) rejection, which implies that all of the claimed features are not present in any ONE reference but is taught by the combination of two or more references.

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In the case at hand, Bogin (the primary reference) is relied upon for teaching **decreasing** bandwidth or number of memory accesses when accesses to the memory are **more than** the original percentage. Woo (secondary reference) is relied upon for teaching **increasing** the bandwidth or number of memory accesses when accesses to the memory are **less than** the original percentage. Hence the combination of the references teaches the claimed invention. Additionally, it is obvious to combine the two references to provide efficient use of the memory by regulating the temperature and to provide improved performance of the system.

Bogin teaches decreasing memory accesses by limiting the access rate of the memory and by blocking memory access request (refer to C 4, L 36-45, L 54-59).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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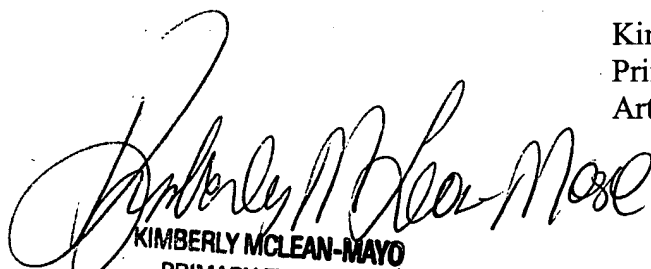
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly N. McLean-Mayo whose telephone number is 571-272-4194. The examiner can normally be reached on Mon, Wed, Thurs (10-4), Tues (9:45 - 6:15).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on 571-272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KNM

March 28, 2007


KIMBERLY MCLEAN-MAYO
PRIMARY EXAMINER

Kimberly N. McLean-Mayo
Primary Examiner
Art Unit 2187